CLAIMS:

1.   A system of apparatuses with a communication bus, the system comprising
-               at least two apparatuses, each comprising a circuit for transmitting messages;
-               a plurality of bus connections, each connected between a respective pair of
apparatuses;
-               the apparatuses comprising circuits for organizing the system into a tree
communication structure, in w   hich a first one of the apparatuses is a root node and
remaining apparatuses are subordinate nodes, communicating with the root node via the bus
connections directly or via other subordinate nodes, the root node and the subordinate being
allowed to arbitrate for access to the communication structure, the root node ultimately
resolving arbitration;
wherein the apparatuses are arranged to dynamically assign a second one of the apparatus to
be root node;
and wherein at least one of the apparatuses is arranged to select the second one of the
apparatuses to become root node on the basis of detection that a third one of the apparatuses,
which may be the second one of the apparatuses, is expected to need relatively more access
to the communication structure than other apparatuses, the second one of the apparatuses
being selected closer to the third one of the apparatuses than the first one of the apparatuses,
in terms of a number of connections needed to communicate from the first and second one of
the apparatuses to the third one of the apparatuses.

2.   A system according to Claim 1, a fourth one of the apparatuses being arranged
to accumulate counts of an amount of communication traffic originating from respective ones
of the apparatuses, the third one of the apparatuses being selected on the basis of having a
highest of the counts.

3.   A system according to Claim 1, the apparatuses being arranged to select the
third one of the apparatuses as the second one of the apparatuses.

4.   A system according to Claim 1, wherein the system operates in fixed duration cycles of messages, a predetermined fraction of the cycle being allocated to isochronous messages, the apparatuses being enabled to send no more isochronous messages per cycle than can be sent in the predetermined fraction of the cycle, the third one of the apparatuses being selected on the basis of detection that the third one of the apparatuses is expected to send relatively more isochronous messages than other apparatuses.

5.   A system according to Claim 4, a fourth one of the apparatuses being arranged to accumulate counts of a number of isochronous messages originating from respective ones of the apparatuses, the third one of the apparatuses being selected on the basis of having a highest of the counts.

6.   An counting apparatus for use in a communication system that comprises apparatuses and bus connections each connected between a respective pair of apparatuses, for communicating a tree structure with nodes corresponding to the apparatuses, including a root node apparatus, the counting apparatus being arranged to count an amount of communication traffic originating from respective ones of the apparatuses, to select a highest count apparatus with a highest count and to initiate redefinition of the root of the tree to an new root apparatus closer to the highest count apparatus.

7.   A counting apparatus according to Claim 6, the counting apparatus comprising a first table and a second table, the first table having entries for pointers to entries in the second table, the entries of the first table being addressed by channel numbers, the entries in the second table being for count values for respective apparatuses, the counting apparatus being arranged

-          to detect assignments of apparatuses as sources for channel numbers;

-          to change a first one of the entries for a first one of the channel numbers in the first table, when it is detected that a first one of the apparatuses is assigned to the first one of the channel numbers, storing a pointer to the first one of the apparatuses in the first one of the entries;

-          to detect a packet with a transmitted one of the channel numbers send via the communication structure;

-          to read a first one of the pointers addressed by the transmitted one of the channel numbers from the first table;

-       and to update a count in an entry in the second table pointed at by the first one of the pointers.

8.   A method of communicating information in a system of apparatuses with a
5   communication bus, wherein the system comprises bus connections between pairs of apparatuses, the apparatuses each comprising a circuit for transmitting messages, the apparatuses comprising circuits for organizing the system into a tree communication structure, in which a first one of the apparatuses is a root node and remaining apparatuses are subordinate nodes, communicating with the root node via the bus connections directly or via
10 other subordinate nodes, the root node and the subordinate being allowed to arbitrate for access to the communication structure, the root node ultimately resolving arbitration; the method comprising

-       predicting a volume of messages to be sent by each of the apparatuses;
-       selecting a heavy using one of the apparatuses, which is expected to need
15 relatively more access to the communication structure than other apparatuses;
-       dynamically selecting a new root apparatus to become root node, the new root apparatus being selected closer to the heavy using one of the apparatuses than the apparatus previously corresponding to the root node, in terms of a number of connections needed to communicate from the new and previous root node to the heavy using one of the apparatuses.